

# INSTALLATION & OPERATION GUIDE



## TS100

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TABLE-TOP INFRARED SENSOR



B L E N D I N G   H I G H   F I D E L I T Y   A N D   A R C H I T E C T U R E ®

# TS100

Table-top Infrared  
Remote Sensor

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## Introduction

The TS100 is a tabletop, infrared sensor designed for use with the Niles infrared extender systems.

Installed in a remote room location, the TS100 receives the IR commands transmitted from your hand-held remote(s). The IR commands are carried via a category 5 cable to your A/V equipment in another room, and instantly "repeated".

The TS100 represents one of the 3 building blocks necessary to complete a Niles IR repeating system:

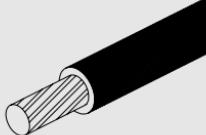
- IR Main System Unit—Models MSU140, MSU250, MSU480 and MSU440Z.
- IR Sensors/Keypads—Models WS100, TS100, MS100, MVC100IR, MS200, CS100 and the IntelliPad®.
- IR Flashers—Models MF1, MF1VF, MF2, MF2VF and the IRB1.

An IR sensor expansion unit, Model IRH610, is available for IR repeater systems used in more than six rooms.

## Features and Benefits

The TS100 offers a number of improvements over other table-top IR sensors.

- Plasma-proof performance—allows placement of the TS100 near plasma displays.
- CFL interference resistant—expands installation flexibility to areas with fluorescent lighting.
- Works under most lighting conditions, including indirect sunlight—eliminates environmental restrictions.
- Universal system—compatible with virtually all brands of A/V equipment and remote controls.
- Excellent IR receiving range—you get 18' to 30' of remote control range (depending upon the strength of your hand-held remote).
- 100% factory tested for pickup range and angle.
- Small size of only 2-7/8" wide x 1-1/16" high x 3-1/8" deep—fits almost anywhere.
- Printed circuit board design uses surface mount technology (SMT), assuring high reliability.
- Ideal for both home and commercial installations.
- Non-skid, non-scratch feet.
- Two year parts and labor warranty.

**"Tech Tip"**

Wire size is expressed by its AWG (American Wire Gauge) number. The lower the AWG number, the larger the wire, i.e., 20 AWG wire is physically larger than 22 AWG.

## Installation Considerations

### Type of Cable

The TS100 connects to the Niles infrared main system unit or IRH610 sensor expansion hub with an individual home run of category 5 cable. When running wires inside walls, most states and municipalities in the U.S. specify that you must use a special type of wire. Usually, the requirement is that the wire has a specific "CL" fire rating, such as "CL-2" or "CL-3". Consult your Niles dealer, building contractor, or local building and inspection department if unsure about which type of wire is best for your application.

### MS100 Mounting Location

The TS100 is ideal for use in applications when ceiling or wall-mounting is undesirable. Its small size and unobtrusive appearance makes it ideal for installation in existing homes or cabinets with great ease and minimal custom work. Installing the TS100 close to the primary location of the user will ensure best performance.

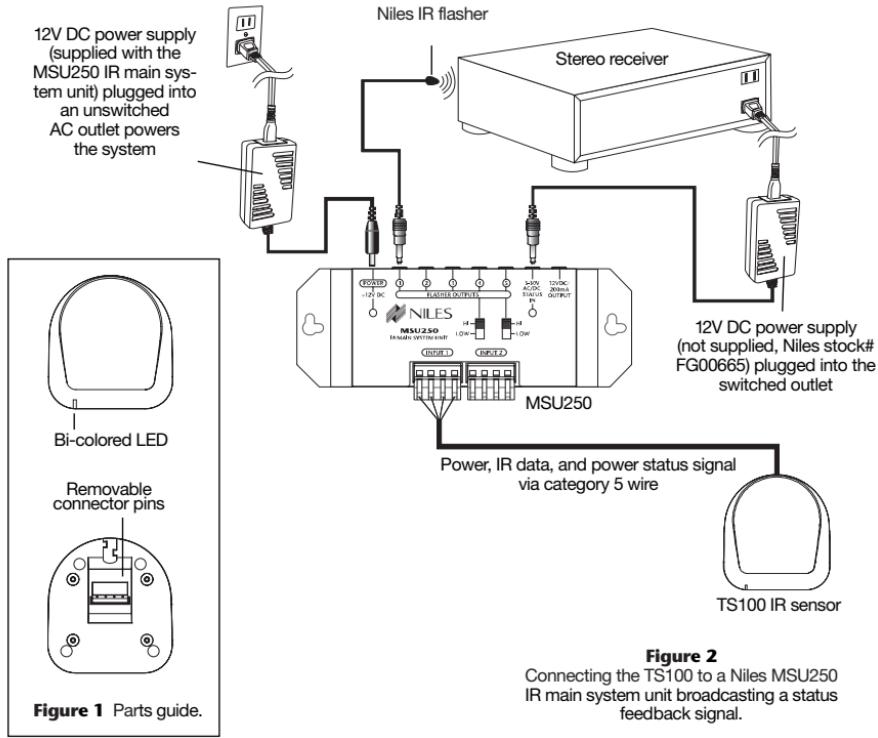
The TS100 is designed to mount over or under almost any flat horizontal surface. Convenient mounting locations for the TS100 are:

- On top of a television set
- On a shelf in an entertainment center
- Under a shelf in an entertainment center

### Receiving Range and Pickup Angle

The receiving range of the TS100 will vary according to the IR output strength of the remote control being used. Remote strength varies among brands depending on the number and

## TABLE-TOP INFRARED REMOTE SENSOR



size of batteries used, and how many IR emitters the remote has. For example, remotes that operate on two small AAA batteries and have only one IR emitter are generally not as strong as remotes that use the larger AA size batteries and have two emitters. Tests with various manufacturers' remote controls have shown that the operating range can vary from a minimum of 20' to a maximum of about 30'.

Infrared signals travel essentially line-of-sight. They will not pass through or around solid objects. Do not rely on an IR signal being able to "bounce" off a wall or object to the MS100.

The IR pickup angle of the TS100 is 30° off-axis (horizontal and vertical) at 20'.

### **Avoiding Electrical Interference**

Avoid locating the TS100 near any potential sources of electrical or optical noise, such as light dimmers, low-voltage lights, and neon lights.

### **Avoiding Optical Feedback**

If installing the TS100 in the same room as an IR flasher, it is possible for the flasher's IR output to be picked-up by the TS100. This effect, known as an optical feedback loop, can cause erratic operation. Optical feedback is similar to acoustical feedback: the howling or whistling sound heard in a P.A. system when the microphone is too close to the speaker. To avoid optical feedback:

1. Re-position the flasher(s) and/or the sensor.
2. Use Niles MF series flashers and cover them with the supplied IR blockers.

## **Avoiding Interference**

TS100 is designed to work in most applications including plasma TV's and in areas where CFL lighting and indirect sunlight are present. You should avoid locating the TS100 near potential sources of electrical or optical noise, such as light dimmers or low-voltage lights.

## **Using the Power Status Display**

The Green power status LED can only be activated by a "power status" broadcast from a Niles IR main system unit (MSU140, MSU250, MSU480, MSU440Z). The IR main system unit will broadcast the power status signal if the preamp/receiver is on and a 12V DC adapter is plugged into the preamp/receiver's switched AC outlet and the 3.5mm plug is connected to the IR main system unit's Status input jack. (Figure 2).

**Note:** The 12V DC adapter plugged into the switched outlet of the stereo receiver is not included with the IR main system unit. It should be 12V DC with a minimum of 100mA of output. It can be ordered from your Niles dealer (FG00665 power adaptor).

## **Using the TS100 with the Intellipad Ci system.**

The TS100 is fully compatible with the Niles Intellipad Ci line, follow the wiring instructions in Figure 4. For specific information see your Intellipad Ci manual.

## Installation

### Step by Step

1. The TS100 is a small free-standing box designed to sit on a shelf or other convenient surface. The unit can be mounted under a shelf using double-sided tape or Velcro® (not supplied).
2. Run the cable to the TS100. Label the cable for future reference.
3. Locate the connector on the TS100 and remove it.
4. Next, strip 1/4" of insulation from the end of each wire. Tightly twist the end of each wire until there are no frayed ends.
5. Use a small flathead screwdriver or your thumbnail to raise the locking tabs, exposing the holes on the removable connectors.



Figure 4

This color code is based on the industry standard T568A coding for the RJ45 connector. When connecting the TS100 to the Niles Ci system observe this pin configuration

6. Insert each wire into the appropriate hole on the removable connector plug (Figure 6), and snap the locking tab down. To help you, the connector plug is keyed. Insert the smooth side of the connector plug into the smooth side of the socket. Don't force the scalloped side of the connector plug into the smooth side of the socket (Figure 5).
7. Double-check all connections. Plug the connector back into its socket on the TS100.

## Operation

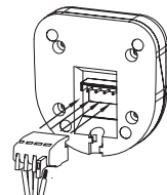
Operation of the TS100 is simple. Stand within the operational range of your TS100, aim your hand-held remote at the TS100 and press the button for the desired command. Your IR command is instantly repeated to your A/V equipment.

### Green “Power Status” LED

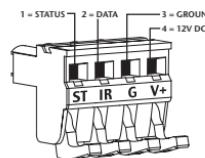
When the TS100 is correctly connected (Figure 2), the Green LED will stay lit as long as the preamp/receiver is on. When your preamp/receiver is off, the LED will stay off.

### Blue “Flashback” LED

The blue “flash-back” LED on the TS100 visually confirms the reception of an IR command.



**Figure 5** Installing the removable connector.



**Figure 6**

## **Troubleshooting**

This manual contains instructions for the TS100 only. For specific information on the adjustment and operation of your Niles infrared extender system, please refer to the instruction manual included with your Niles IR Main System Unit (MSU140, MSU250, MSU480 MSU440Z, IntelliControl).

The bi-color blue/green LED on the front of the TS100 is a useful troubleshooting aid.

The blue LED should light only when a remote command is being received. If the LED on the TS100 "flickers", and the TS100 functions normally, there is no cause for concern, some stray IR signal are being received by the TS100 but are not being repeated.

1. Test the remote control(s) by operating the A/V equipment directly. Replace the batteries if needed.
2. Double check the cable connections on all TS100's and on the main system unit. Look for open, shorted or reversed wires.
3. Test for interference from the following sources:
  - Neon or halogen lights in the room
  - Light dimmers, beginning with those closest to the TS100

Observe the TS100's LED while performing all the tests. It is possible to have interference from more than one source.

### **Eliminating Optical feedback**

In some installations, two conditions combine to create an optical feedback loop. Symptoms can include: poor range, intermittent operation or no operation.

The conditions which sometimes combine to create a feed-back loop are:

1. Both a sensor and a flasher are located within the same room.
2. There is some low-level noise or interference on your system.

You can eliminate optical feedback by replacing any IRB1 "flooding flasher" with MF1 or MF2 MicroFlashers and covering all flashers with the supplied IR blocking covers.

### **Identifying the Type of Interference**

The blue "flash-back" LED on the front of the TS100 is a useful trouble-shooting aid.

The LED should light blue only when a remote command is being received. However, if the LED on the TS100 "flickers", and the TS100 functions normally, there is no cause for concern.

**If the TS100 does not work, and the LED does not light at all:** Test the remote control(s) by operating the A/V equipment directly. Replace the batteries if needed. Double check the cable connections on the TS100's and on the IR main system unit. Consult your IR main system unit's manual for more detail.

**If the TS100 does not work, and the LED “flickers” or remains solidly lit:** Cover up the Sensor with a piece of cardboard (your hand will actually create electromagnetic interference under some conditions). Observe the IR test LED.

**IR Test LED Off:**

Optical Interference

**IR Test LED On or Flickering:**

Electromagnetic Interference

**EMI (Electromagnetic Interference)**

Identify the source of the interference. The most common sources of electromagnetic interference are listed in the Installation Considerations section on pages 5 and 6. To eliminate EMI try the following methods:

1. Move the sensor or the sensor cable away from the EMI source or move the source of the EMI away from the sensor or the cable.
2. Connect the Sensor's GND terminal to true earth ground (if this isn't feasible use the main system unit's GND terminal).

There are many methods for reducing interference. Which solution is best for you depends on your situation. Contact Niles Technical Support at 1-800-289-4434 if you require further assistance.

## Specifications

### IR System

Compatible with virtually all brands of remotes using carrier frequencies between 26 and 105 kHz

### IR Receiving Range

18' to 30' depending upon the strength of the remote control

### IR Receiving Angle

30° off-axis (horizontal and vertical) at 20'

### Mounting

Table-top

### Wiring Requirements

Individual "home-runs" of category 5 cable

## Unit Dimensions

2-7/8" wide x 1-1/16" high x  
3-1/8" deep

## Contents

TS100 x1  
Removable connector x 1

### "TECH NOTE"

The feedback led can be disabled if it continues to flicker or visual feedback is not desired. Discrete on and off IR commands are available on the Niles Technical support website for disabling the feedback led. The address is: [nilesaudio.com/techsupport](http://nilesaudio.com/techsupport).

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**Notes**

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